EXHIBIT 78

UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

RICHARD KADREY, et al.,

    Individual and Representative Plaintiffs,

  v.

META PLATFORMS, INC.,

              Defendant.

Case No. 3:23-cv-03417-VC

SUPPLEMENTAL REBUTTAL REPORT OF

CRISTINA VIDEIRA LOPES, PhD

FEBRUARY 17, 2025

TABLE OF CONTENTS

A.   INTRODUCTION

1.   My name is Cristina V. Lopes. On February 3, 2025, I submitted a rebuttal report (my "Rebuttal Report") in the above-referenced proceeding on behalf of Plaintiffs Richard Kadrey, Sarah Silverman, Christopher Golden, Ta-Nehisi Coates, Junot Díaz, Andrew Sean Greer, David Henry Hwang, Matthew Klam, Laura Lippman, Rachel Louise Snyder, Jacqueline Woodson, Lysa TerKeurst, and Christopher Farnsworth ("Plaintiffs"). This is a supplemental report correcting certain errors in my Rebuttal Report which were discovered on February 13, 2025.

2.   My Rebuttal Report included two appendices, B and C, detailing data that was used for testing Llama 3's memorization of passages of books, including some of Plaintiffs' books, as counterexamples to Prof. Ungar's Experiment 3 concluding that Llama did not memorize Plaintiffs' works.[1] These appendices were referred to in Part III-E of my Rebuttal Report. As indicated in my deposition, these experiments only impacted certain of my rebuttal arguments as to Prof. Ungar's continuation experiments, and I did not rely on them for any other part of my opinions.

3.   During my deposition on February 13, 2025, Meta's counsel brought to my attention that some of the tests in those appendices used erroneous text as the expected completions, rendering those tests incorrect, and potentially affecting my conclusions.[2] I thank Meta's counsel for bringing these inadvertent errors to my attention.

B.   SOURCE OF ERRORS

4.   As stated in my Rebuttal Report ¶ 91, Plaintiffs' Counsel provided me with 73 prompts originating in Mr. Hunt's publicly-available tests.[3,4] The process of communicating these prompts to my team included a JSON file provided by Counsel and included here as **Appendix A**. Upon

---

[1] Lopes Rebuttal Report, Parts III.D-E.

[2] See Exhibits 7-12 from my deposition dated February 13, 2025.

[3]   https://www.linkedin.com/posts/louiswhunt_over-400-pages-of-algorithmically-generated-activity-7274952160776261632-yYlV/

[4]   https://www.linkedin.com/posts/louiswhunt_sarahksilverman-for-you-here-are-131-activity-7274512589936549892-Cyv1

review, it appears that the JSON file did not include completions of the original text of the work. I have highlighted a few of those instances in the first few pages of **Appendix A**, showing examples that seem to be of Mr. Hunt's experiment, and not the original text. All of the Plaintiffs' example prompts in our tests originated in this JSON file, and were, therefore, susceptible to the errors. Other prompts were extracted by my team from PDF/PNG files available from Mr. Hunt's online materials and therefore were not affected.

C.   CORRECTIONS

5.   I have now reviewed every prompt and expected completion, and I have corrected the affected tests by manually checking our data against both the original PDF/PNG files from Mr. Hunt (**Appendix B**) and the data provided by Meta's counsel.

6.   After I reviewed the 73 prompts for correctness, I re-ran the experiments and summarize the results here. The revised appendices and corrected materials are included in this supplemental report. **Appendix C** and **Appendix D** list the full data and results for all 73 examples obtained for the Llama 3 8B model and the Llama 3 70B model. Each example contains: (1) the author and title of the book; (2) the input text that served as prompt; (3) the corresponding input tokens; (4) the number of tokens in the input; (5) the completion text produced by the model; (6) the original text to which it is being compared – **this time, the correct original text in all cases**; (7) the completion tokens, i.e., the tokens associated with the completions text; (8) the original tokens, *i.e.*, the tokens associated with the original text; (9) the number of tokens associated with the completion text; (10) the number of tokens associated with the original text; (11) the Exact Token Similarity; (12) the BLEU Similarity; (13) the Jaccard Similarity; (14) the Edit Distance; and (15) the Edit Distance Similarity. The examples are numbered from 0 to 72 and the identification of the example appears at the top of corresponding page.

D.   TESTS ON LLAMA3 70B SHOW SIGNIFICANT MEMORIZATION

7.   After the corrections, the Llama 3 70B model was able to continue all 73 passages successfully, according to multiple metrics, showing strong memorization effects. In 19 out of 73 of the cases (26%), the Llama 3 70B model was able to extend the prompt with tokens that were 100% identical to the corresponding text in the copyrighted work. In the other cases, the similarities were still substantial. Specifically, in 43 of the cases (59%) the differences fell in just

a few words (Jaccard similarity > 0.8). Even the lowest scoring prompt of the Plaintiffs' books (Junot Diaz's Drown, sample PSILrxng-ocr, scoring 32.9% in Jaccard similarity) shows strong qualitative similarity, because some of the differences relate to capitalization of words.

8.   **Figure 1** summarizes the corrected results. Additional plots for all the metrics are provided in **Appendix E**.
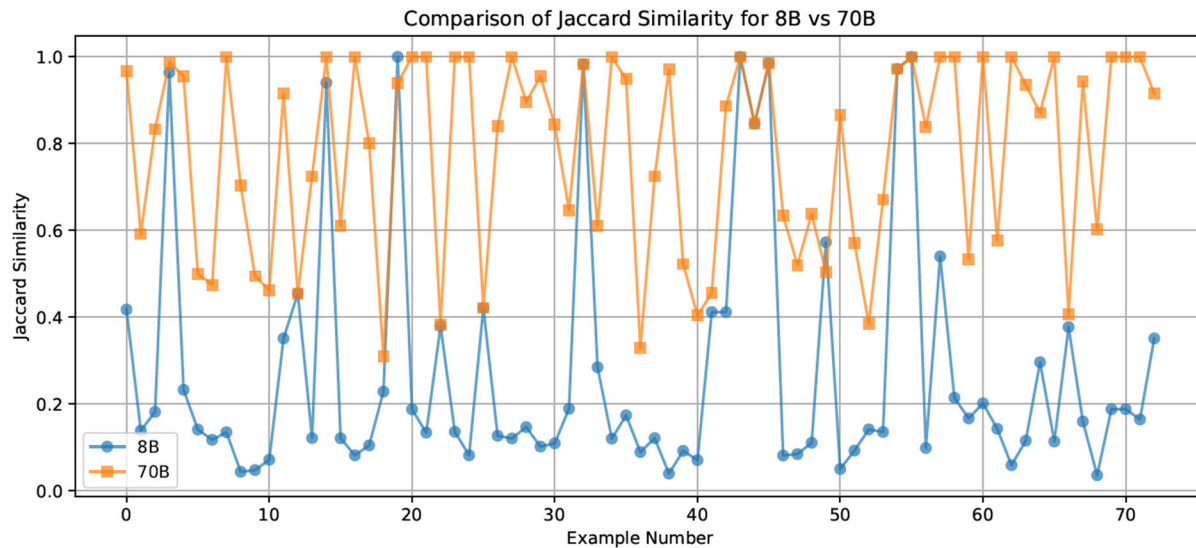

Figure 1. Results from the Plaintiffs' memorization test

9.   Like before, in all 73 cases, Llama 3 70B outperformed Llama 3 8B model in recalling the passages.

10. Also like before, the results also show that Prof. Ungar's metric, *i.e.*, exact token sequence, underestimates the amount of similarity between the completions and the original texts. **Table 1** of my Rebuttal Report showed some examples for Llama 3 70B exact sequence matches were low but the similarity scores were high. The substance of that table remains unchanged, as the corrections did not affect those examples. The table is repeated here for clarity, as the order (*i.e.* the index) of the examples changed.

064_#866061.1.pdf		068_#865738.1.pdf		028_#865996.1.pdf		033_#865687.1.pdf	
Exact	*0.4815*	Exact	*0.1198*	Exact	*0.1534*	Exact	*0.2105*
BLEU	0.8678	BLEU	0.6696	BLEU	0.9250	BLEU	0.6584
Jaccard	0.8710	Jaccard	0.6033	Jaccard	0.9438	Jaccard	0.6111
Edit dist.	0.8457	Edit dist.	0.6168	Edit dist.	0.9261	Edit dist.	0.5489
048_#865826.1.pdf		042_#865941.1.pdf		000_#865995.1.pdf		056_#865802.1.pdf	
Exact	*0.3659*	Exact	*0.4516*	Exact	*0.2710*	Exact	*0.3503*
BLEU	0.7652	BLEU	0.9085	BLEU	0.9572	BLEU	0.8608
Jaccard	0.6379	Jaccard	0.8868	Jaccard	0.9672	Jaccard	0.8385
Edit dist.	0.7724	Edit dist.	0.8871	Edit dist.	0.9252	Edit dist.	0.8853

Table 1. Exact sequence match vs. other metrics

11. Given the corrected results, my opinion about Prof. Ungar's statements related to memorization of the Plaintiffs' Works in the Llama models has not changed. Note that my opinion was, and still is, based not just on these tests using Mr. Hunt's prompts, but also on the results shown by Prof. Ungar's Experiment 3. The tests with Mr. Hunt's prompts show several additional instances of memorization that further contradict Prof. Ungar's statements. Using Prof. Ungar's extraction method with his own prompts and with Mr. Hunt's prompts is, by no means, an exhaustive search of memorization of Plaintiffs' works in the Llama models. In particular, as stated on my Rebuttal Report ¶ 89, the method itself is too simplistic to offer the sweeping conclusion Prof. Ungar offers.

Respectfully Submitted,

Cristina ("Crista") Videira Lopes, PhD

February 17, 2025

4